

Amphibia, Anura, Hylidae, *Phyllomedusa boliviana* Boulenger, 1902 and *Phyllomedusa camba* De la Riva, 2000: Distribution extension in central Brazil

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ABSTRACT: This note reports the presence of *Phyllomedusa camba* in the municipality of Cotriguaçu (Amazon forest) and *P. boliviana* in the municipality of Poxoréu (Cerrado), state of Mato Grosso, central Brazil. This represents the first record for *Phyllomedusa boliviana* and a distribution extension of *P. camba* in the state Mato Grosso.

Phyllomedusa boliviana (Figure 1A) and *P. camba* (Figure 1B) are medium-sized frogs belonging to the *Phyllomedusa tarsius* group (Faivovich *et al.* 2005; Frost 2011). The *P. tarsius* group comprises five species (Faivovich *et al.* 2005): *P. boliviana* Boulenger, 1902; *P. camba* De la Riva, 2000; *P. neildi* Barrio-Amorós, 2006; *P. sauvagii* Boulenger, 1882 and *P. tarsius* (Cope, 1868). *Phyllomedusa boliviana* has been reported to inhabit the Amazonian slopes of the Andes and lowlands in Bolivia, northern Argentina and Brazil (Uetanabaro *et al.* 2008; Frost 2011). *Phyllomedusa camba* has been reported to occur in the southwestern Amazon basin from southeastern Peru, western Brazil (states of Amazonas, Acre, and Rondônia) to eastern Bolivia (Frost 2011). In Brazil, *P. boliviana* occurs in Serra de Urucum (Mato Grosso do Sul state) and Rondônia (Amphibiaweb 2011). *Phyllomedusa camba* occurs in Aripuanã (mislabelled as *P. boliviana* by São-Pedro *et al.* 2009) and Vila Bela da Santíssima Trindade (M. Marchezini pers. comm.) in the state of Mato Grosso, Porto Walter in the state of Acre (Duellman 2005) and Cachoeira Nazaré, west bank of Rio Ji-Paraná (De La Riva 1999), Espigão do Oeste (Bernarde, 2007) and Cacoal (Turci and Bernarde, 2008) in the state of Rondônia. For the state of Mato Grosso, no records have been published for *P. boliviana*, and we are glad to report the first locality of this species in the state.

On December 2010 several individuals of *P. camba* were found calling in artificial ponds (9°51'21.35" S, 58°14'51.35" W). We observed one amplexed couple above the water body. In these ponds we also observed tadpoles of this species. On 8 March 2011 several individuals were found calling at branches on the edge and inside a remnant of primary rainforest. These records were made at São Nicolau farm, municipality of Cotriguaçu (9°51'16.9" S, 58°14'57.7" W; 200 m). On 04 January of 2010 eight



FIGURE 1. *Phyllomedusa boliviana* (A) from São Nicolau farm, municipality of Cotriguaçu and *P. camba* (B) from Boa Vista Farm, municipality of Poxoréu, both in the state of Mato Grosso, Brazil, Photos by D.J. Rodrigues.

individuals of *P. boliviana* were found in a small stretch of a forest edge significantly impacted by a road (MT-260) near Boa Vista farm, municipality of Poxoréu (15°54'19.96" S, 54°14'25.09" W). The males called at branches above the water body. All those records were carried out in the state of Mato Grosso.

The calling males of *P. camba* were observed from December to April and of *P. boliviana* from November to February. The calling activity began at sunset, extending until the middle of the night. One adult female of *P. camba* was captured and measured 79.8 mm. Adult males of *P. camba* measured 73.04 ± 0.73 mm snout-vent length ($n = 2$), and of *P. boliviana* measured 61.9 ± 1.8 mm ($n = 2$). Mating behavior in both species is similar to that found by Vaira (2000). Males call at night on the vegetation. The eggs are attached to leaves in the vegetation above temporary pools, and hatched tadpoles drop into the water below where they develop. They have also been observed breeding in artificial ponds as cited in Vaira (2000) and Duellman (2005).

Voucher specimens reported in this note are housed in the herpetological section of the Biologic Collection of Meridional Amazon (ABAM-H) of Federal University of Mato Grosso, campus Sinop-MT, Brazil (*P. camba* ABAM-H 70; 91 and 277 and *P. boliviana* ABAM-H 472 and 473; collection permits #10174-1, Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis, IBAMA).

The new records extend the distribution of *P. boliviana* to south of the Brazilian Amazon, about 1,400 km (Figure 2) from its type-locality (Chulumani, Bolivia, 2,000 m above sea level; 16°24' S, 67°31' W), and extend the distribution of *P. camba* to 790 km (Figure 2) from its type-locality (Puerto Almacén, Departamento de Santa Cruz, Bolívia; 15°46' S, 62° 5' W) and 140 km from the nearest locality (Aripuanã, MT, Brazil; 10°09' S, 59°25' W).

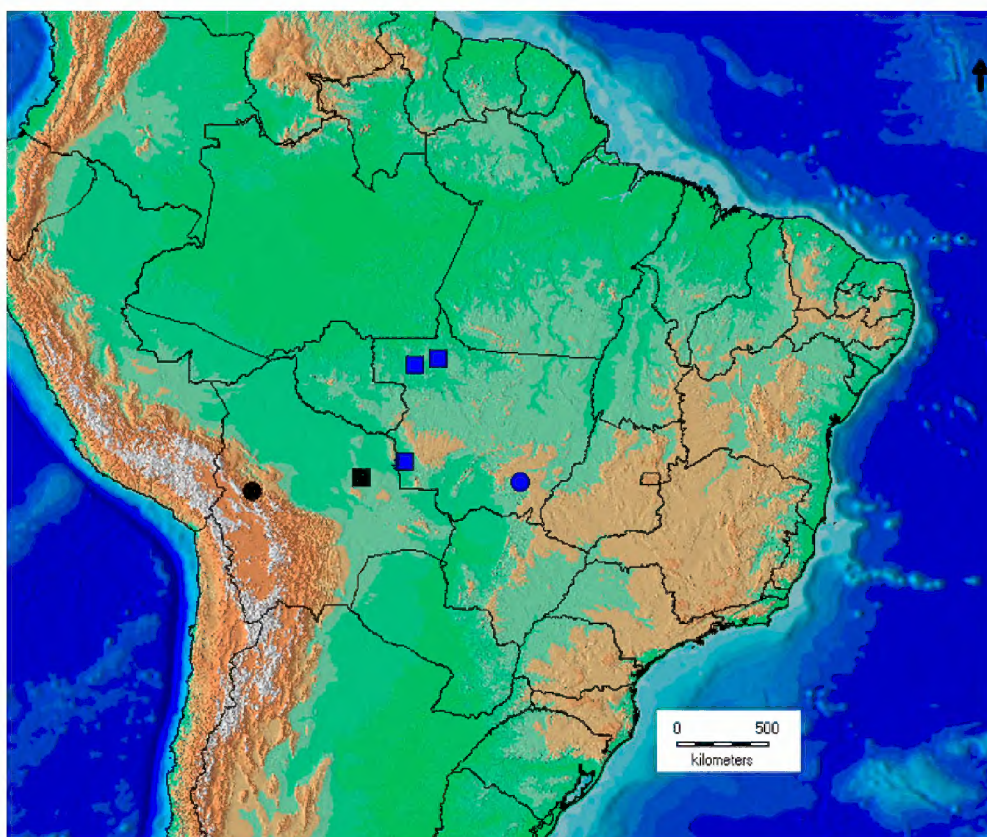


FIGURE 2. Distribution of *Phyllomedusa boliviana* and *P. camba* in the state of Mato Grosso, Brazil. Blue circle = *Phyllomedusa boliviana*: municipality of Poxoréu (15°54'19.96" S, 54°14'25.09" W). Blue squares = *P. camba*: São Nicolau Farm, municipality of Cotriguaçu (09°51'16.9" S, 58°14'57.7" W; 09°51'21.35" S, 58°14'51.35" W), Vila Bela da Santíssima Trindade (14°59' S, 59°57' W) and Aripuanã (10°09' S, 59°25' W). Black circle = Chulumani, Bolivia (ca. 16°24' S, 67°31' W), type-locality of *P. boliviana* (Boulenger 1902). Black square = Puerto Almacén, Bolívia (15°46' S, 62°05' W), type-locality of *P. camba* (De La Riva 1999).

Phyllomedusa boliviana can be confused with *P. camba* (De La Riva 1999; São-Pedro et al. 2009) because both species share the unique character of having a very dark brown iris (Figure 1A, B). However, *P. boliviana* differs from *P. camba* by having an apinkish-cream line with small tubercles on its flanks marking the zone of contact with the green dorsum (Figure 3A), the border of the upper eyelid yellowish-cream and red (Figure 3B), and a crosslinked membrane that protects the eyes (Figure 3C), whereas *P. camba* has flanks with irregular white spots that extend from belly to dorsum (Figure 3D), only the yellow line above the eyes (Figure 3D), and a transparent membrane that protects the eyes (Figure 3F).

Phyllomedusa camba and *P. boliviana* are currently classified as Least Concern by the 2010 IUCN Red List of Threatened Species (De la Riva et al. 2004; De la Riva et al. 2008). Unfortunately, some localities where these species were recorded (e.g. municipality of Cotriguaçu in the Amazon Forest and municipality of Poxoréu in the Cerrado) have suffered significant habitat changes and fragmentation. Due to habitat destruction caused by agricultural practices (including fire) and logging, it is important to monitor the populations of these two species in order to study the effects of those anthropogenic activities.

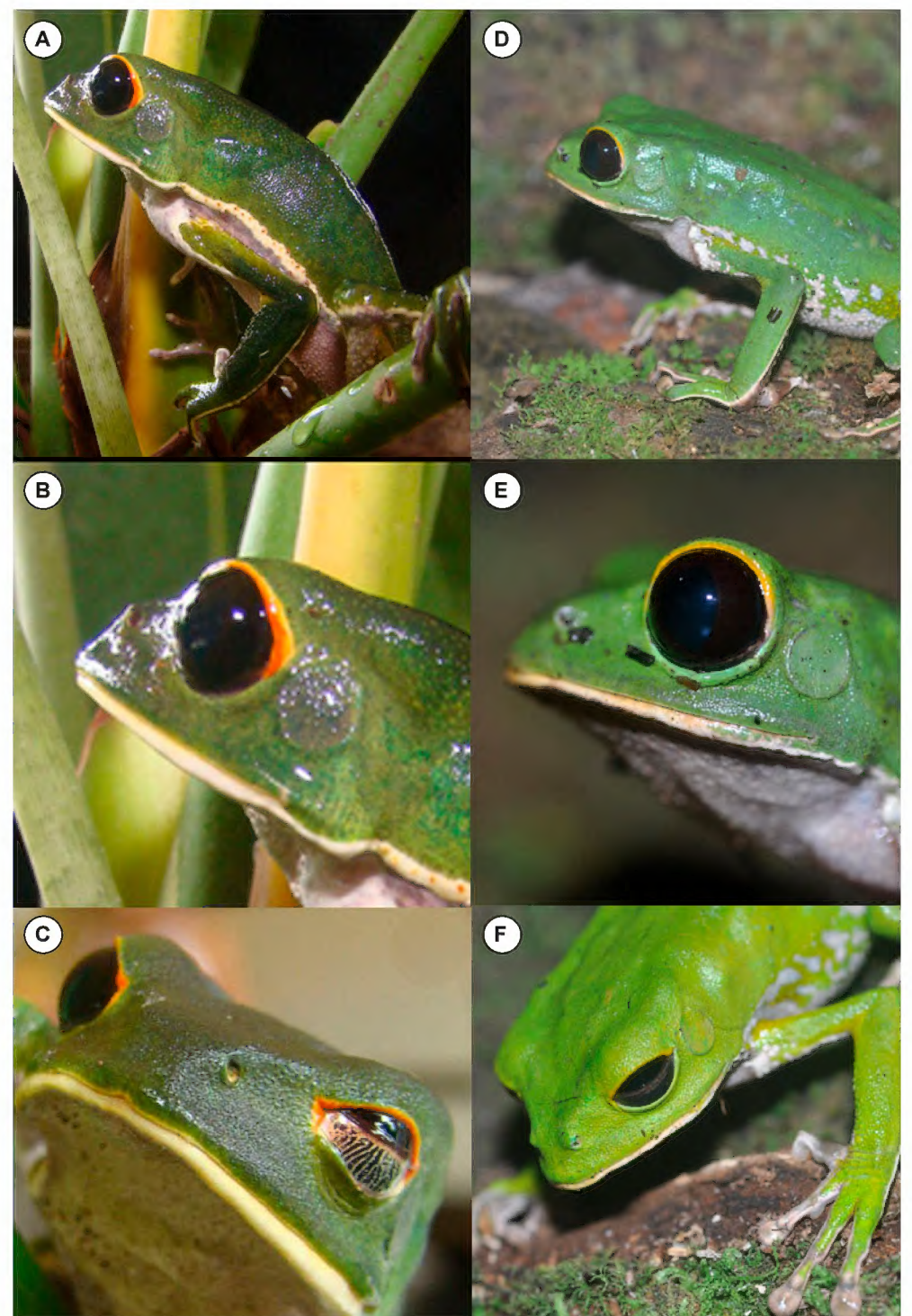


FIGURE 3. Differences between *P. boliviana* and *P. camba*. Flanks with a pinkish-cream line with small tubercles in *P. boliviana* (A) and irregular white spots in *P. camba* (D); eyelids yellowish-cream or yellow-orange in *P. boliviana* (B) and yellow in *P. camba* (E); crosslinked membrane in *P. boliviana* (C) and transparent membrane in *P. camba* (F).

ACKNOWLEDGMENTS: We are grateful to Roberto Stofel and Alexandre do Nascimento Farias for field assistance; A. T. D’Heursel Baldisseri for the English review and to an anonymous reviewer for valuable comments and suggestions on manuscript; to São Nicolau farm for logistic support, and to the Ofício Nacional das Florestas – ONF-Brazil for financial support and permission of access to the study area. Domingos de Jesus Rodrigues thanks to CNPq by Bolsa de produtividade em Pesquisa (Proccess n. 501408/2009-6) and financial support (Proccess N. 558225/2009-8) and Janaina da Costa de Noronha to CAPES (felloship). Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA) provided collection permits. This is publication 08 in the NEBAM technical series.

LITERATURE CITED

- Boulenger, G.A. 1902. Descriptions of new batrachians and reptiles from the Andes of Peru and Bolivia. *Annals and Magazine of Natural History*. 7(10): 394-402.
- Bernarde, P.S. 2007. Ambientes e temporada de vocalização da anurofauna no Município de Espigão do Oeste, Rondônia, Sudoeste da Amazônia - Brasil (Amphibia: Anura). *Biota Neotropica* 7(2):87-92.
- De La Riva, I. 1999. A new Phyllomedusa from southwestern Amazônia (Amphibia: Anura: Hylidae). *Revista Española de Herpetología* (1999):13:123-131.
- De La Riva, I., K-H. Jungfer, A. Angulo and S. Reichle. 2004. *Phyllomedusa camba*. In IUCN 2010. *2010 IUCN Red List of Threatened Species. Version 2009.2*. Electronic Database accessible at www.iucnredlist.org. Captured on 29 April 2011.
- De La Riva, I., G.R. Colli and E. Lavilla. 2008. *Phyllomedusa boliviana*. In IUCN 2010. *2010 IUCN Red List of Threatened Species. Version 2009.2*. Electronic Database accessible at www.iucnredlist.org. Captured on 29 April 2011.
- Duellman, W.E. 2005. *Cusco Amazónico: The lives of amphibians and reptiles in an Amazonian rainforest*. New York: Cornell University Press. 433 p.
- Faivovich, J., C.F.B. Haddad, P.C.A. Garcia, D.R. Frost, J.A. Campbell and W.C. Wheeler. 2005. Systematic review of the frog family Hylidae, with special reference to Hylineae: phylogenetic analysis and taxonomic revision. *Bulletin American Museum of Natural History* 294: 1-113.
- Frost, D.R. 2011. *Amphibian Species of the World: An online reference. Version 5.3*. Electronic Database accessible at <http://research.amnh.org/herpetology/amphibia/index.html>. Captured on 29 April 2011.
- São-Pedro, V.A., H.C. Costa and R.N. Feio. 2009. *A Herpetofauna do AHE Dardanelos, Aripuanã, Mato Grosso*. Viçosa: The authors. 40 p.
- Turci, L.C.B. and P.S. Bernarde. 2008. Levantamento herpetofaunístico em uma localidade no município de Cacoal, Rondônia, Brasil. *Bioikos* 22:101-108.
- Uetanabaro M., C.P.A. Prado, D.J. Rodrigues, M. Gordo and Z. Campo. *Field Guide to the anurans of the pantanal and surrounding Cerrado*. Campo Grande: Editora UFMS. 196 p.

RECEIVED: May 2011

LAST REVISED: May 2011

ACCEPTED: May 2011

PUBLISHED ONLINE: July 2011

EDITORIAL RESPONSIBILITY: Raúl Maneyro